

To: Office of Planning and Research
PO Box 3044, 1400 Tenth Street, Room 222
Sacramento, CA 95812-3044

From: California Energy Commission
1516 Ninth Street, MS-48
Sacramento, CA 95814

Project Title: Gas Optimized Advanced Heavy Duty Engine Concept

Project Location – Specific: 7825 National Service Rd

Project Location – City: Greensboro, NC **Project Location – County:** _____

Description of Project:

This research will evaluate and further develop the promising High Pressure Direct Injection (HPDI) technology, which allows natural gas engines to operate at the same high efficiency and high power density as today's heavy-duty diesel engines. Opportunities for cost effectiveness will be addressed using a systematic approach and Volvo's global supply base. The project will accelerate the research and development of an advanced natural gas engine concepts that can be used in the heavy duty vehicles built by the Volvo Group. The overall objective is to develop a natural gas engine concept with diesel engine performance in terms of drivability and efficiency. Potential to further improve fuel efficiency through enhanced in-cylinder mixing will also be investigated.

The HPDI technology will be systematically evaluated using an overall engine system approach. The base engine and the exhaust after treatment system will be adapted and further developed to meet the special requirements of the new combustion technology with the objective to optimize the complete gas engine concept. In a subsequent step, using the experimental developments from the project, the gas engine concept will be implemented in a virtual demonstrator providing means for best possible estimates of the on the road vehicle performance in terms of drivability, efficiency and environmental impact.

The total term of this project will be 34 months. The term of this agreement was originally defined as 26, and is typical for a project of this complexity in heavy-duty natural gas engine design work. The additional eight month is required due to the unanticipated situation where the one of the subcontractor no longer had the appropriate hardware to perform the testing required in one of the technical tasks.

This project was closely coordinated with the Alternative and Renewable Fuel & Vehicle Technology Program whose staff members participated in development of the grant solicitation as well as the review and scoring of proposals. Staff from the South Coast Air Quality Management District and the National Renewable Energy Laboratory also participated as technical reviewers.

The proposed project will accelerate R&D of advanced natural gas engine concepts that can be used in the heavy duty vehicles built by the Volvo Group and, if successful, will contribute substantially to increased adoption of heavy duty natural gas vehicles in the Californian, and more broadly, North American markets by developing the emission performance of the natural gas engine to meet the US10 and additional California Air Resources Board regulations. If it is successful, the Volvo 13 liter engine will contribute substantially to increased adoption of heavy duty natural gas vehicles in the California, and more broadly, North American markets, by developing a highly efficient natural gas engine to meet the US EPA 2010 and California Air Resources Board 2010 regulations.

Name of Public Agency Approving Project: California Energy Commission

Name of Person or Agency Carrying Out Project: Volvo Technology of America, Inc.

Exempt Status: *(check one)*

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));

- ☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☐ Categorical Exemption. State type and section number _____
- ☐ Statutory Exemptions. State code number. _____
- ☒ Common Sense Exemption. 15061(b)(3)

Reasons why project is exempt:

The activity is covered by the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.

Lead Agency

Contact Person: Reynaldo Gonzalez **Area code/Telephone/Ext:** 327-1334

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ☐ Yes ☐ No

Signature: _____ **Date:** _____ **Title:** _____

☒ Signed by Lead Agency

☐ Signed by Applicant

Date received for filing at OPR: _____